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UNITED STATES PATENT AND TRADEMARK OFFICE

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ART UNIT	PAPER NUMBER
3692	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

		Application No.	Applicant(s)
Office Action Summary		09/685,838	MOORE ET AL.
		Examiner	Art Unit
		Clement B. Graham	3692

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>23 January 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>34 and 35</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>34 and 35</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.　　Claims 34-35 is currently pending in this Application.

Claim Rejections - 35 USC § 112

2.　　The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 34 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3.　　In particular, Claim 34, lines 8-9 states " pre-solving using a computer the plurality of anticipated financial portfolio optimization problems" which represents "stored optimal solutions", it is unclear what is the meaning of "pre-solving" because in the this step the data is already stored ...". For further examination, the examiner interprets the limitation in light of this 112, second rejection.

In particular, Claim 34, line 10 states " compiling", it is unclear what is the meaning of "what is it you are compiling" and what is the result of the compilation ...". For further examination, the examiner interprets the limitation in light of this 112, second rejection.

In particular, Claim 34, lines 16-17, states " solving the current financial optimization problem using the stored data groups the solving step including the step of", first it is unclear what is the meaning of the current financial optimization problem "where was it inputted and if you are solving the current financial portfolio optimization problem why did you pre-store the optimization solutions ...". For further examination, the examiner interprets the limitation in light of this 112, second rejection.

In particular, Claim 34, line 20, states "determining whether or not the selected data group contains optimal solutions", it is unclear how one would know it is "optimal?" ...". For further examination, the examiner interprets the limitation in light of this 112, second rejection.

Claim 35 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, Claim 35, lines 9-11 states " an optimization unit in said computer said optimization comprising means for pre-solving using a computer the plurality of anticipated financial portfolio optimization problems" which represents "stored optimal solutions", it is unclear what is the meaning of "pre-solving" because in the this step the data is already stored ...". For further examination, the examiner interprets the limitation in light of this 112, second rejection.

In particular, Claim 35, line 10 states " means for compiling the plurality of data groups based on the results of the pre-solving", it is unclear as to what is the meaning of compiling and what is it you are compiling" and what is the result of the compilation ...". For further examination, the examiner interprets the limitation in light of this 112, second rejection.

<div align="center">Claim Rejections - 35 USC § 103</div>

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 34-35, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sampson et al (Hereinafter Sampson U.S. Patent No. 5, 802, 499) in view of Hausman et al (Hereinafter Hausman U.S Patent 6, 086, 619.

As per claim 34, Sampson discloses a computer-implemented method for solving a current portfolio optimization problem comprising the steps of:
Storing on a computer, a plurality of data groups, each associated with one of a plurality of anticipate portfolio optimization problems (Note abstract and see column 13 lines 15-53 and column 23 lines 27-67 and column 24 lines 1-57) each of the data groups including optimal solutions to a corresponding anticipated portfolio optimization problem see column 13 lines 15-53 and column 23 lines 27-67 and column 24 lines 1-57) each of the data groups further including input values and intermediate calculation values associate with the corresponding anticipated portfolio optimization problem (see column 13 lines 15-53 and column 23 lines 27-67 and column 24 lines 1-57) pre-solving(see

column 58 lines 14-67 and column 59 lines 1-43) using said computer, the plurality of anticipated portfolio optimization problems and compiling, using said computer, the plurality of data groups based on the results of the pre-solving step (see column 58 lines 14-67 and column 59 lines 1-43 and column 62 lines 64-67 and column 63 lines 1-33) preparing and storing on said computer, a plurality of look-up tables for identifying each of the plurality of data groups, the plurality of look-up tables containing equation names, RHS (Right Hand Side) values, and objective values pertaining to le plurality or anticipate portfolio optimization problems (see column 10 lines 58-67 and column 11 lines 1-14) solving, using said computer, the current portfolio optimization problem using the stored data groups the solving step including the steps of:

selecting, using user-defined functions, at least one of the stored plurality of data groups using the look-up tables (Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45 and column 10 lines 58-67 and column 11 lines 1-14) and determining whether or not the selected data group contains optimal solutions to the current portfolio optimization problem (see column 3 line 65 and column 4 lines 5-35) wherein, if the determining step determines the selected data group contains optimal solutions to the current portfolio optimization problem, then the optimal solutions included in the selected data group are output as optimal solutions to the current portfolio optimization problem(Note abstract and see column 1 line 65 and column 4 lines 5-65 and column 5 lines 1-20) and wherein, if the determining step determines that the selected data group does not contain optimal solutions to the current portfolio optimization problem, then the selected data group is modified using a search method, and the current portfolio optimization problem is iteratively solved using the modified data group to obtain optimal solutions to the current problem.(see column 3 line 65 and column 4 lines 51-35).

Sampson fail to explicitly teach financial.

However Hausman discloses the QUADCOSTS construct allows the modeler to specify quadratic cost elements or bilinear cost elements which are proportional to the product of two (possibly non-unique) specified flows. Use of this capability allows representation of risk adjusted return optimization problems, e.g., portfolio optimization

subject to linear constraints. Other example QUADCOST uses include production problems where unit price decreases linearly with the quantity produced, production problems where unit price decreases or remains constant with increases in production of other products (substitutability among products), production problems where unit cost of an input resource decreases linearly as the quantity of the resource is increased; etc.(see column 10 lines 46-58).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Sampson to include financial taught by Hausman in order to perform optimization on a financial portfolio.

As per claim 35, Sampson discloses a system for solving a current portfolio optimization problem comprising.

a storage unit("i. e, database server") in a computer, storing a plurality of data groups("i. e, data structures") each associated with one of a plurality of anticipated portfolio optimization problem (i. e, input queries).(Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45) each of the data groups including optimal solutions to a corresponding anticipated portfolio optimization problem ("i. e, generating plan") each of the data groups further including input values and intermediate calculation values associated with the corresponding anticipated portfolio optimization problem (see column 19 lines 35-43 and column 4 lines 30-67 and column 5 lines 1-20) and an optimization unit in said computer, said optimization comprising:

means for pre-solving the plurality of anticipated portfolio optimization problems ("i. e, generating solution to each sub-problem" see column 2 lines 30-65) means for compiling the plurality of data groups based on the results of the pre-solving(see column 19 lines 35-43) means for preparing and storing (Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45) a plurality of look-up tables for identifying each of the plurality of data groups. the plurality of look-up tables containing equation names.(see column 4 lines 15-29 and column 10 lines 58-67 and column 11 lines 1-14) RHS (Right Hand Side) values, and objectives values pertaining to the plurality of anticipated portfolio optimization problems

(see column 10 lines 58-67 and column 11 lines 1-14) means for solving the current portfolio optimization problem using the stored data groups , the solving means including:

means for selecting, using user-defined functions, at least one of the stored plurality of data groups using the look-up tables(Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45 and column 10 lines 58-67 and column 11 lines 1-14) and means for determining whether or not the selected data group contains optimal solutions to the current portfolio optimization problem (see column 3 line 65 and column 4 lines 5-35) wherein, if the determining means determines that the selected data group contains optimal solutions to the current portfolio optimization problem, then the optimal solutions included in the selected data group are output as optimal solutions to the current portfolio optimization problem .(see column 3 line 65 and column 4 lines 51-35) and wherein if the determining means determines that the selected data group does not contain optimal solutions to the current portfolio optimization problem, then the selected data group is modified using a search method, and the current portfolio optimization problem iteratively solve using the modified data group to obtain optimal solutions to the current problem.(see column 3 line 65 and column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20). Sampson fail to explicitly teach financial.

However Hausman discloses Netcore is a method, implemented in software, for efficiently expressing optimization problems which can be solved with network, linear, integer, mixed integer linear, and quadratic.programming techniques. Every Netcore representation of a problem may include a network, linear, integer, mixed integer, or mixed integer linear programming problem where each integer variable has a finite number of possible values and with optional quadratic and bilinear terms in the objective function (hereinafter collectively referred to as MILPQ programs); it can also be proven rigorously that every MILPQ program can be expressed in Netcore. The Netcore representation uses directed graphs and associated data with certain numeric fields for the nodes and links, and a few simple but powerful constraint mechanisms.(see column 4 lines 2-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Sampson to include financial taught by Hausman in order to perform optimization on a financial portfolio.

Conclusion

RESPONSE TO ARGUMENTS

6.   Applicant's arguments files on 01/23/2007 have been fully considered but they are not persuasive for the following reasons.

7.   In response to applicant's arguments regarding Sampson and Hausman.

8.   In response to Applicant's arguments that Sampson and Hausman fail to teach or suggest "pre-solving anticipated financial portfolio optimization problems and the additional limitations relating to the pre-solving , storing results the pre solving and utilizing the pre-solved solutions to solved current problems and pre solving anticipated portfolio optimization problems and storing the results of these pre solved calculations so that they may be used to speed up the process of solving a current portfolio optimization problem needed and performing optimization on a financial portfolio management or network optimization techniques can be applied to credit exposure management" the examiner disagrees with Applicant's because these limitations were addressed as stated,

Sampson teaches Storing ("i. e, database server") on a computer, a plurality of data groups("i. e, data structures") each associated with one of a plurality of anticipate portfolio optimization problems ("i. e, input queries") Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45 each of the data groups including optimal solutions ("i. e, generating plan") to a corresponding anticipated portfolio optimization problem, each of the data groups further including input values and intermediate calculation values associate with the corresponding anticipated portfolio optimization problem see column 19 lines 35-43 and column 4 lines 30-67 and column 5 lines 1-20 pre-solving ("i. e, generating solution to each sub-problem" see column 2 lines 30-65 using said computer, the plurality of anticipated portfolio optimization problems Note abstract and see column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45 and

compiling, using said computer, the plurality of data groups based on the results of the
pre-solving see column 19 lines 35-43 preparing and storing(Note abstract and see
column 1 line 65 and column 4 lines 1-65 and column 5 lines 1-20 and column 40 line
45 on said computer, a plurality of look-up tables("i. e, database tables") for identifying
each of the plurality of data groups, the plurality of look-up tables containing equation
names.see column 4 lines 15-29 and column 10 lines 58-67 and column 11 lines 1-14
RHS (Right Hand Side) values, and objective values pertaining to le plurality or
anticipate portfolio optimization problems see column 10 lines 58-67 and column 11
lines 1-14 solving, using said computer, the current portfolio optimization problem using
the stored data groups the solving step including the steps of:
selecting, using user-defined functions, at least one of the stored plurality of
data groups using the look-up tables Note abstract and see column 1 line 65 and
column 4 lines 1-65 and column 5 lines 1-20 and column 40 line 45 and column 10 lines
58-67 and column 11 lines 1-14 and determining whether or not the selected data group
contains optimal solutions to the current portfolio optimization problem see column 3
line 65 and column 4 lines 5-35 wherein, if the determining step determines the selected
data group contains optimal solutions to the current portfolio optimization problem, then
the optimal solutions included in the selected data group are output as optimal solutions
to the current portfolio optimization problem Note abstract and see column 1 line 65 and
column 4 lines 5-65 and column 5 lines 1-20 and wherein, if the determining step
determines that the selected data group does not contain optimal solutions to the
current portfolio optimization problem, then the selected data group is modified using a
search method, and the current portfolio optimization problem is iteratively solved using
the modified data group to obtain optimal solutions to the current problem. see column 3
line 65 and column 4 lines 51-35.

Hausman discloses the QUADCOSTS construct allows the modeler to specify
quadratic cost elements or bilinear cost elements which are proportional to the product
of two (possibly non-unique) specified flows. Use of this capability allows
representation of risk adjusted return optimization problems, e.g., portfolio optimization
subject to linear constraints. Other example QUADCOST uses include production

problems where unit price decreases linearly with the quantity produced, production

problems where unit price decreases or remains constant with increases in production

of other products (substitutability among products), production problems where unit cost

of an input resource decreases linearly as the quantity of the resource is increased;

etc.(see column 10 lines 46-58).

Therefore it is obviously clear that Applicant's claimed limitations were addressed within

the teachings of Sampson and Hausman.

Further Applicant's is just storing data and the steps includes storing optimal solutions

to a corresponding anticipated financial portfolio optimization problems and the pre

solving step uses the plurality of anticipated financial portfolio optimization, how can you

pre solved a problem when you already store the solutions to the problem.

9.   With respect to Applicant's that the examiner fail to establish Prima Facie Case

of obviousness, Examiner respectfully submits that obviousness is not determined on

the basis of the evidence as a whole and the relative persuasiveness of the

arguments. See In re Oetiker, 977F. 2d 1443, 1445,24 USPQ2d 1443, 1444 (Fed. Cir.

1992); In re Hedges, 783F.2d 1038, 1039, 228 USPQ* 685, 686 (Fed. Cir.1992); In re

Piaseckii, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir.1984); In re Rinehart,

531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Using this standard, the

Examiner respectfully submits that he has at least satisfied the burden of presenting a

prima facie case of obviousness, since he has presented evidence of corresponding

claim elements in the prior art and has expressly articulated the combinations and the

motivations for combinations that fairly suggest Applicant's claimed invention. Note,

for example, in the instant case, the Examiner respectfully notes that each and every

motivation to combine the applied references are accompanied by select portions of

the respective reference(s) which specially support that particular motivation and /or

an explanation based on the logic and scientific reasoning of one ordinarily skilled in

the art at the time of the invention that support a holding of obviousness. As such, it is

not seen that the Examiner's combination of references is unsupported by the applied

prior art of record. Rather, it is respectfully submitted that explanation based on the

logic and scientific reasoning of one of ordinarily skilled in the art at the time of the

invention that support a holding of obviousness has been adequately provided by the motivations and reasons indicated by the Examiner, Ex pane Levengood, 28 USPQ2d 1300(Bd. Pat. App &.,4/293 Therefore the combination of reference is proper and the rejection is maintained.

10. The Examiner apologies for typographical error by miss stating the Graefe for Sampson.

November 3, 2003

10.   **THIS ACTION IS MADE FINAL**. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clement B Graham whose telephone number is 703-305-1874. The examiner can normally be reached on 7am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung S. Sough can be reached on 703-308-0505. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-0040 for regular communications and 703-305-0040 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

CG

April 24, 2007

Frantzy Poinvil
Primary Examiner
Art Unit 3628